

AVIATION

The Oldest American Aeronautical Magazine

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An air view of the grandstands and the Exposition Building, Mines Field, Los Angeles, Calif.

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The National Air Races and Aeronautical Exposition

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There is *NO* Most important part of a WRIGHT ENGINE



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Aircraft Engine



Wright "B" radial
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No. 13

Progress Desired

FOR a few days prior to the start of the Class B New York to Los Angeles derby there was considerable controversy relative to the eligibility of six planes to compete in the race. Those who requested compliance did so on the ground that the planes in question were special racing planes and not stock models as stipulated in the rules of the event. The defending pilots maintained that their entries were stock models and that the rules had been complied with in every requirement. Arguments followed argument, but finally sponsorship prevailed and, with the exception of one entry, all of the complaining pilots started the race, even though they felt that they did not have a chance to place in the money.

To say that the "racing planes" were not eligible would seem to be incorrect in view of the fact that they complied with the rules. To say that the pilots of the other entries had no grounds for complaint would be equally incorrect, for the reason that they had entered planes which they considered to be the best obtainable in stock model planes according to the rules. Therefore each pilot who entered that race was correct in his belief according to his interpretation of the rules.

In order to avoid any future misunderstandings, it would seem altogether fitting for cross country derby rules committees to be most explicit in just what is an eligible type of plane and what is not. However, if it is decided that planes similar to those which caused so much discussion in the Class B derby this year are not to be regarded as stock models, then a race for "stock-like" planes should be added to the program of cross country events. Competition runs most successfully in the development and perfection of a plane or an engine. It spurs each manufacturer on to go the other fellow one better with the result that aviation in general is benefited. In a certain sense it has been competition that has given us the planes and engines that we have today. In the matter of war aircraft our country has been in efforts to produce something better than its neighbor across the border or across the sea. And in the matter of commercial aircraft each individual manufacturer has striven to turn out a product for which there will be a greater demand than that of another manufacturer.

By all means let there continue to be stock model derbies, for, regardless of individual piloting skill, like the National Air Tour there derbies long run the best and the worst in a plane or an engine. But, let there be no possible chance for a misinterpretation of the rules, and for those planes which do not come under the stock model must let there be a separate derby. Progress in aircraft and engine design is what the industry is striving for most of all.

Sales and Service

ALTHOUGH the manufacture of airplanes, engines and accessories and equipment may be regularly making sales there are certain times of the year when business is on the rise, and times when business is at more or less of a standstill. Naturally, these conditions are not applicable to the aircraft industry alone. One finds these existing in practically every industry.

Taking the automotive industry as an example, it is immediately agreed that the greatest number of cars sold in a year are sold during the spring and early summer months, and that very few cars, as compared with the total sales of the year, are sold during the late fall and winter months. Perhaps it is for that reason that automobile shows are usually held in January, February and March. And perhaps, also, it might prove a good idea for the aeronautical industry to hold its major aircraft show at that time of the year.

However, whether the aeronautical industry should follow the lead of the automotive industry in the matter of holding shows, is something to be determined in some other way. The point to be borne in mind right now is that the aircraft manufacturer will do well to follow the lead of the automobile manufacturer as regards the latter's efforts during the "off season".

In order to obtain profitable national distribution, the successful automobile manufacturer had to build up a live wire distributor and dealer organization. And added to that he had to build up a service organization, which, as time has passed, was most successful in the prosperity of his business. To this ground work he devoted his entire energy during slack seasons. He bent his co-operation in the matter of planning sales campaigns and advertising campaigns, and he secured new distributors and dealers to take the place of the "retailers" that he had weeded out. In short, he did everything possible to create more future business for his distributors and dealers.

Some members of the aeronautical industry have realized the importance of a national selling and service organization and are now in the midst of their establishment, while others are content for the present with "laxity to sell" sales. The former are to be congratulated, and the latter should be made to see the light. It will be to their own advantage to commence at once the ground work that is necessary if a progressive national sales organization is to be established. For those who are not of the opinion that the expense of building up such a selling and service organization is warranted at this time, it is pointed out that the daily increase of competition methodically develops the expenditures of the manufacturers in question as to hold their positions in the field five years hence.

The Aerial Events at Mines Field

By CHARLES F. McREYNOLDS

THE Los Angeles Aeronautical Exposition and 1938 National Air Races, centrally the greatest series of aeronautical events yet staged in one city within a period of a little more than a week's time, are now entering history.

Whether the aim be said about the management and accomplishments of the series so recently concluded, it must be admitted that the general conception and final staging of the 1938 Air Races and allied activities was greater in its scope than any aerial presentation formerly witnessed in this country. During the nine days of the meet there were over 300,000 paid admissions and at least as many more persons witnessed the flying from outside the grounds. Arrangements of every sort were worked out to the smallest detail so that the great crowds, and the hundreds of racers, were handled to the actual satisfaction of everyone.

Although the attendance on Saturday, September 10, was a bit disappointing due to a lack of any race events and the failure of the advertised mass flight of civilian airplanes to get under way, interest increased tremendously over the week-end and the stands were jammed throughout the remainder of the show.

The Army, Navy and Marine Corps races were the whole show until Thursday, September 13, thrilling the crowds with the closed course races, formation and stunt flying. Although the widely heralded flying locomotive sustained considerable attention when maneuvered overhead on Saturday in Walsh Waterman, as co-racer,



The "Sea Hawks" and Lt. N. Murray. L. to R., Lieut. P. Davis, Jr., Mr. Hooten, Lieutenant Tomlinson and Lieut. A. P. Stone.

top model of the old 1910 Curtiss Pusher before equipped with a Cessna QX5 engine, while the "Flying Pickle" radio airplane designed by Prof. A. A. Merrill of the California Institute of Technology and built and flown by Marie Kelly never failed to bring gasps of wonderment from the spectators.

The Navy team demonstrated its aerial smoke screen, flying a complete wall of vapor across the field with two scout planes flying at an altitude of approximately 300 ft. This screen was effective for from five to ten minutes in spite of strong westerly winds.

Most popular of all the flying events was the daily performance of the three "Sea Hawks," Lieutenants Tomlinson, Davis and Stone. Many experienced pilots stated that this daily exhibition of formation flying was the most perfect demonstration of flying control that they had witnessed. Flying in the standard Boeing fighters equipped with Pratt and Whitney "Wasp" engines these men performed almost every stunt evolution, in formation, and at altitudes often below 100 ft. Taking an afternoon at random, on Tuesday they took off at 4:45 p.m., painted altitude and down in V formation, performing three loops successively before the stands while in close formation and not more than 200 ft. high at the bottom of each loop. Next, figure eights in perfect V formation, diving turns and zooms with a formation so tight that the inner wings of the leading planes seemed to almost touch the tail of the leader. Two demonstrations of a track formation with Lieutenants Tomlinson flying inverted while his companions completed the V by dropping into a half roll and flying on the side of

AVIATION
 September 10, 1938.

the trailing wing on the right in the field. Next a half roll in formation as close as the wings as well to almost collide as this rolled into a steep loop and a perfect formation in diving. Lieutenant's track, which began the original turn as a formation, shifted to exhibit a loop, and the stands in perfect form as though for review followed closely by a demonstration of the spiral cups, loop in which the planes enter the same loop and fly as many as ten loops each clearing the tail of the man at front. The exhibition was completed by inverted double rolls, tail-pins, inverted figure eights, slow and fast rolls and Immelings. On one occasion Lieutenant Tomlinson passed just the stands at an altitude of not over 75 ft. and rolled over on his back when directly in front of the stands, according to shouting while still inverted and rolling to aerial flight while in the clouds.

Lieutenant Louis W. "Sharkie" Stone

Although the starting of the "Three Modulators" at the First Pattern Course, Bellows Field, was marred by the crash of Lieut. J. J. Williams when he failed to recover from an inverted flight at a dangerously low altitude, Col. Charles Lindbergh volunteered to lead his former classmates, Lieutenants Cornsack and Woodward for the remainder of the day period. The flying of this trio was the feature of the afternoon from Wednesday, September 12, to the close of the meet.

The more parachute jumps were popular at all intervals every type of parachute need seemed to feature with equal effectiveness.

Also, in the proximity of the races the night program was consistently chilly and did not at any time appear a popular crowd. At Watson's night fireworks there an elaborate display of rocket fireworks and an excellent water-battle presentation served to amuse the cheering crowds. A night demonstration of parachute landing, flare and on a same tide signaling device used by the California Aerial Transport Co., also featured on the evening performance.

Monday, Navy Day, was opened by a model flying contest early in the morning which attracted several hundred persons. The flight of 101 aerial planes in mass formation at noon was also an interesting feature. A striding attack by the VB2B Squadrons U. S. Navy, in which the planes flew in great speed from all directions upon an imaginary enemy was a great demonstration of the value of such tactics in war time. Although Earl Beaulieu with his Warner Scarab engine Cessna monoplane was first of the Class A transcontinental racers to arrive, it was not until late Tuesday night that he was officially announced the winner.

Due to delay in starting the Class B and C racers from



Marine Corps trainer being hoisted by crane at Mines Field.

New York, they did not finish until Wednesday, and incident was therefore chiefly featured by military formation flying and closed course races. Second Event 4, a closed course race of two laps around the five mile course, the Marine Squadron 8 only, was won by Lieutenant Lashburn, time 23 min. 14 sec., speed 129.14 m.p.h. Sixty-four Pioneers were scored with a speed at 126.0 m.p.h. and Lieutenant Woodward took third place with an average speed of 120.5 m.p.h.

The California Class A race phase came in a brief corner than expected when H. S. Myers flying his Kinner six and Seaplane academy reached Mines Field shortly after 1:30 P. M. Only eight other fliers finished this race instance having been cancelled. This was partly due to several of the entrants being unsuccessful entrants.

(Continued on page 945)



Handling plane at Mines Field. Men in white are students of the Warner School of Aeronautics. (Warner School of Aeronautics photo.)

its career as a fanzeller was shortly ended when Harry Crandall crashed it through the north fence while attempting to take off. This vehicle was equipped with cowcatcher, plates rods, axle stack, bell, wheels, engine cut and engine passengers built and painted on, but had no visibility and no exit so was probably well out of the way. Al Wilson assured the crowds daily with his stunting in a built



The "Sea Hawks" being off in formation for their daily stunting at Mines Field.

Inside the Exposition Building

By **ANDREW R. BOONE**

TWO hundred and fifteen airplane manufacturers and distributors, makers of accessories, aviation clubs and chambers of commerce, occupied the big pavilion at Mines Field during the recent National Air Races and Aeronautical Exposition strung through the money and money of Los Angeles individuals and corporations.

It was an undertaking infinite in detail and correspondingly large in cost. The crowds, of course, came primarily to see the races. Spectacular advertising could be built around these events to better effect than around a more prosaic collection of airplanes and parts.

On the whole it seemed that the races and stunt flying distracted the attention of most of the visitors from the exhibits. During all the flying events, even when the stands were filled to overflowing, the exhibition hall was comparatively empty. Of course, many persons really interested in aviation studied the exhibits with care, and gathered such valuable information, but on the whole the crowd just mumbled through the exhibition hall on its way to and from the racing events. Those exhibitors who had been at the Detroit indoor show felt that the crowd there showed a much more active interest in their products.

Although there were many nationally distributed products represented at the Los Angeles exposition, the exhibits had a distinctly Western flavor. At least half the planes were shown by local distributors, and many of the exhibits were places that are not well known east of the Rockies. In the matter of accessories the same thing

held true. A considerable part of the accessories shown were distinctly local.

Those who roamed through the mammoth building, which contained 200,000 sq. ft. of floor space, had opportunity to examine the 38 planes, skeletons of planes and accessories there, and the various other offerings ranging from airport equipment to new helmets. For purposes of representation of the state, the planes will be discussed first, while later the smaller showings will be described.

Alance of Novel Ideas

The exposition was marked by the absence of "speculative," or new and novel ideas. This is significant. More than one exhibitor and visitor remarked that it indicates a stability in the design and manufacture of airplanes which lends faith to be reflected in their cost to the user or consumer. Changes here and there indicated the minor improvements are likely to be the security of improvement where improvement is possible. Casual observers, of course, would miss many of these points, yet it was interesting to note that large crowds gathered around one of the Douglas Co. booths to examine and discuss an unfinished Douglas O-51, a Liberty-powered Air Corps observation plane, carrying two passengers and capable of a speed of 140 m. p. h. "Jim and a Vought 'Corsair' were the only two modern military or naval planes in the exhibition. The skeleton of the O-51 revealed the intricate construction of an airplane not apparent in the finished job. This



Left, a unique display of the Advance Aircraft Co.



Right, the Mohaupt-Ryan Aircraft Corp. display

unfinished plane, from an educational point of view, was said by some visitors to be the most interesting and instructive of the show.

Elsewhere the Douglas concern held the center of the stage again, literally as well as figuratively. In the exact center of the building at 30 P. M., the second night of the exposition, there was unveiled and presented for the first time to the public, the Douglas Ambassador monoplane, a three-place open plane for general use. It is powered with a Wright "Whirlwind" engine and has a high speed of 140 m. p. h. This plane has a wing span of 35 ft., chord of 6 ft. three inches, and a wing area of 212 sq. ft. Overall it measures 22 ft. six inches, and stands eight feet high. The plane has a gasoline capacity of 60 gal. It lands at a speed of 55 m. p. h. It is interesting to note, also, that it will climb 900 ft. during the first minute and has a service ceiling of 14,500 ft. It weighs empty 1,750 lb., carries a useful load of 750 lb., has a wing loading of 11.95 lb. per sq. ft., and a power loading of 11.20 lb. per horsepower.

Western Air Express occupied a prominent position with a Jockey D-10 whose lightning velocity attracted many favorable comments. These planes were purchased by arrangement with the Guggenheim Foundation for use on the "model airline" between Los Angeles and San Francisco. In front of the Jockey and near the main entrance stood the Madeline Airplane two-engine Ford, a 12-passenger all-metal plane. The Madeline has lost some of these planes now in service.

In addition to the Ford plane, two other all-metal planes were exhibited. The Prudden all-metal monoplane stood near the Ford. Just before the opening of the exhibition it was announced that the company's name had been changed from the Prudden-Dix Design Airplane Co. to the Prudden Airplane Corp. For the first time, the company exhibited the "Wing" powered plane and announced performance figures. This is the plane which is advertised as being "half five a bridge." Among its features are eight places, dual control, overstaffed furniture, non-shrinkable glass and conveniences. The plane weighs fully loaded 5,000 lb. The pay load is 1,200 lb. It has a usual climb of 750 ft. per minute, service ceiling of 12,000 ft., absolute ceiling of 14,000 ft., high speed of 114 m. p. h. and landing speed of 39 m. p. h.

Thaden Plane Arrives

On the second day of the exposition the Thaden all-metal monoplane was flown in from San Francisco. This is a three passenger plane, powered with a 150 hp. Curtiss engine. It was the first plane offered by Thaden to the public. This plane has a high speed of 120 m. p. h. and cruises at 95 m. p. h. It presents an unusual feature in wing flaps, to be used for drag or slowing the plane's speed for landing purposes. These are located at the trailing edge of the wing close inward, and are operated by the pilot, who "winds" them down and back into place.

(Continued on page 932)



Two extensive exhibits in the Exposition Building. Left, Wright Aeronautical Corp. Right, Schell's Magneto Co., Inc.



Two of the many well laid out exhibits at the show.



Left, Eklips Machine Co. Right, Kendall Refining Co.

The Six Cross-Country Air Derbies

By D. R. LANE

THE cross-country races held in connection with the National Air Races at Los Angeles have shown great improvement over the similar ones flown last year from New York to Spokane, according to Valentine Gephart, secretary of the National Aeronautics Association. In addition, Mr. Gephart stated that they have shown the way to further improvements in any such events that may be held in later years.

The chief advance of this year's races over those of last year, he declared, was the shortening of the flights between control points and the addition of another overnight stop, making four instead of three, as in the first transcontinental race.

"This has helped reduce the strain on the pilots," he said. "It has always been a considerable mental drag on a flier to fly all day and then spend half or three quarters of the night in checking his engine to be ready for the next day's flight."

"I think this probably will be cured next year by requiring that a mechanic be carried in all these contests. Then the pilot can fly and the mechanic can do the other work. The provision of mechanical staffs at control points will not serve the purpose, a pilot wants to have his own trustworthy man to do the work. Then if there is any error he has someone who can help directly or indirectly."

"This will lighten the burden all around. Why, do you know that one plane started in the Class A race from New York that had not even had a flight out since installation of a new engine for the first? 'Tex' Beaman worked that 1,400 miles. The day of the start began really for the crew."

Gephart added that the contests had proved conclusively the value of the new production engines intended to replace the Curtiss OX5.

"I have talked to every pilot who finished the light plane races," he said, "and not one of them has reported any difficulty whatever with any of the new engines, which have been approved by the Department of Commerce. On the other hand, I heard a number of complaints with the plumbage of the old war-time engines. There has been some talk of having the war-time engine entirely from these races but I probably will disprove that auto entirely."

First Three Winners Named

The Class A derby from New York to Los Angeles developed some of the stiffest competition shown in any of the cross-country races. Won by Earl Rowland in a Cessna, it was a struggle all the way between his plane, the Travel Air flown by W. D. Emery and an American Moth whose pilot was Robert Duke and Theodore Tamm. All three were powered with Warner air-cooled radial engines.

Less than an hour's difference was shown in the elapsed time of all three. The spectacular feature of the contest was a struggle between Rowland and the Duke-Tamm crew. Emery in the race just kept a steady drive, not getting caught by the highlight. However he did some beautiful flying during the race.

Rowland took his Cessna out in front at the start and held the lead until after leaving Alhambra, Texas. On

(Continued on page 947)



U. Thompson in the Winnie he piloted to first place in the Class B Victory race to Los Angeles derby.

fast leg of the flight Duke and Tamm outdistanced him during their flying time continued longer than his. Later Rowland requested the lead and was the first to land at Meigs Field, the terminus of the race.

The three had far weather most of the way. Over the first leg of the flight, in McKinney Park, Pennsylvania, fog was encountered and over Ohio there was plenty of rain, but aside from this the skies were clear and the most meteorological condition encountered were the mild dew squalls and gentle winds of the arid southwestern country.

In fact, the weather was too good for the wishes of some of the pilots who knew the country well and had hoped to apply their knowledge by getting through passes the others did not know and could not find in that weather. As Ted Rankin said: "It wasn't necessary to be any cringing all a fellow had to do was to pick up the mountain peaks on his map and set his course by them."

Long Men for Himself

There were some instances of pilots hanging back to follow comrades who knew the country better but generally the race was flown "every man for himself." Luck entered into it in some degree, as it does in all aviation events of this sort, and the chance of a late warning at Kansas City was used by some pilots to have made a potential difference in the finish.

It was said that members of the race committee there ordered some of the pilots not to land until a later hour than the race themselves had started. This made the loss of a protest.

The Kansas City committee, however, decided against the protest after investigating the circumstances of the affair. Telegraphic advice to this effect went from Chairman Dudley Stille of the contest committee at Los Angeles and thereupon the official time was promulgated, showing Rowland the winner.

The protest was signed by all the pilots in the race except Rowland and Duke and Tamm. Else the protest was allowed Emery would have been the winner on elapsed time.

Several pilots expressed approval of the changed conditions as compared with last year's race, as regards the length of stage flights. Last year there were three overnight stops on the New York to Spokane Class A race, this year, for a distance more than 500 miles greater, no additional night control was provided and a number of day controls added. This reduced the average flight from 300 to 400 or 450 miles to 575 to 600 miles. It also gave opportunity for many more cities to have some active connection with the race.

Rowland, winner of the race, in 30 years old and was never reported in service with the Army aerial forces. When intending to pass the physical examination kept him out of this activity, he took up the study of aviation's technical aspects. Later he bought his own plane and then flew. Leland Cone of Arkansas noted that state in a political campaign.

Emery said the race showed plainly the great progress made in aviation since last year's Spokane contest. He praised the new arrangement of stops to shorten the flying



Pilot and passengers of the "Hick" powered Lockheed 11, winner of the Class C Derby. Left to right, John C. Hutchinson, Robert W. Cantwell and Eric P. Hutchinson.

day for the pilots. Duke and Tamm declared the race showed the remarkable progress made in light plane development. They said they had flown all the way without safety in their minds.

The official time of each of the first six place winners was as follows:

	1440:31	Winnies from 11:00
1 Earl Rowland	1440:31	25 hrs 13 min 41 sec
2 Robert Duke	1449:47	25 hrs 13 min 41 sec
3 Theodore Tamm	1449:47	25 hrs 13 min 41 sec
4 W. D. Emery	1449:47	25 hrs 13 min 41 sec
5 Theodore Tamm	1449:47	25 hrs 13 min 41 sec
6 James Chaffey	1449:47	25 hrs 13 min 41 sec
7 James Chaffey	1449:47	25 hrs 13 min 41 sec

Earl had begged the heels of the Class B transcontinental racers from New York to Los Angeles and even after they had arrived, secretaries continued for some time as to who had won. Unofficial elapsed times

(Continued on page 947)



The start of the Class B transcontinental air derby from Rosamond Field, (L-1)

Conventions Held in Some Side Lights and High Lights Los Angeles

FIVE national conventions, held in Los Angeles during the week of the National Air Races and Aeronautical Exposition, brought many representatives to light and provided valuable thought on the part of those who attended. The meetings started on Tuesday and continued until Saturday at noon. These sessions began with the Commercial Airplane Manufacturers' section of the Aeronautical Chapter of Commerce and continued on Wednesday with the National Aeronautical Association closed the doors on the final day.

The conventions were as follows: The Airplane Manufacturers' section of the A. C. C. A., the Society of Automotive Engineers, the E. A. A., the California Development Association's aviation conference and the National Airport Executives. The Professional Pilots Association was listed as a new association, but its membership includes chiefly residents of Los Angeles.

Aircraft Manufacturers Well Represented

Possibly the deliberation of the various organizations should be presented chronologically. Such being the case let us consider the manufacturers' discussions. Fully 90 per cent of the industry was represented at the two-day session at which J. Don Alexander presided. Among those in attendance were the following:

C. J. Rescher, Advance Aircraft Corp.; R. E. Lutz, Advance Aircraft Corp.; Walter Beech, Travel Air Mfg. Co.; E. R. Porterfield, American Eagle Aviation Co.; E. A. Johnson, Johnson Airplane and Supply Co.; W. L. Viles, Jr., Moaw Aircraft, Inc.; R. S. McDow, Fairchild Aviation Corp.; Thomas Hamilton, Hamilton Aero Corp.; Mr. Andriew, Hamilton Mfg. Co.; J. R. Irvin, Irvin Aircraft Co.; O. B. Hawley, Alexander Aircraft Corp.; A. J. Edwards, Joseph Kreuter Co.; George Prudden, Prudden Airplane Corp.; Allen Lockwood, Lockheed Aircraft Corp.; Victor Ross, Seidman Airplane Co.; Alan Seidman, Aeronautical Systems Co.; E. H. Nelson, Boeing Aircraft Corp.; Maj. Lester D. Gardner, Aeronautical Chapter of Commerce; John Harding, Aeronautical Chapter of Commerce; A. H. Krivier, Krivier-Bentley Aircraft Corp.; R. A. Harnam, Harnam Aircraft Corp.; Herbert Thadon, Thadon All-Metal Plane Co.; M. M. Brockway, Crews Motor Coach Co.; Airplane Division; J. J. Morrey, Aircraft Holding Corp.; F. J. Johnson, Scott Aircraft Corp.; Frank Tichenor, publisher of "News Digest"; Earl D. Gibson, publisher of Aviation; George Newfield, business manager, Aviation; Andrew R. Boone, Aviation; C. S. Jones, Curtin Flying Service; Maj. C. M. Young, U. S. Dept. of Commerce; and Messrs. Brown and Gordon, Sparan Aircraft Corp.

On the call of the chair, John Harding, Jr., secretary, read the minutes of the meeting held at Detroit. These were approved. As requested by those present, the chair asked Major Gardner to explain the recent divisional reorganization of the Aeronautical Chapter of Com-

mence. To this request, Major Gardner complied and thanked the manufacturers for their faith and trust in him by recently electing him president of the Chapter. Major Gardner explained that he always has been a friend of aviation. He expressed the wish that every



Senator Wilson Bingham of Connecticut, newly elected president of the National Aeronautic Association.

manufacturer will call upon him and his organization for assistance if needed.

The chairman at this point explained the divisional division of vice presidents of the Chapter, and outlined the recent organization of the south central division at Wichita. Following further discussion, the group voted to adopt the plan of placing a convention from each division, thus to elect their chairman at the meeting which will be held during the International Aeronautical Exposition in Chicago, Dec. 1-9. It also was the sense of the meeting that the boundaries of the six regional divisions should be determined by the house office of the Chapter.

The preliminary work having been accomplished, the members moved rapidly to discussion of mutual problems. A standard form of sales agreement was discussed and discounts of various sorts were considered. The members voted to attend the Chicago exposition in

(Continued on page 935)

The Wright Aeronautical Corp.'s booth contained the largest radial air-cooled engine in the world, the Cyclone, which develops 350 hp and is the big brother of the famous Whirlwind.

Keynote showed a composite film of aircraft building, cotton dating and flying.

San Diego Air Service Corp. felt pulled over the success of the Warner Scarin. Roy Campbell, Jr., manager, recently completed the first Scarin installation on the coast in a Travel Air, to be used by his school.

Miss Beale Davis, secretary and assistant general manager of the Pioneer Insurance Co., is the only woman aircraft executive who makes air selling trips by plane a regular business. She exhibited at the Pioneer booth. On her way to Los Angeles she visited five manufacturers and sold insurance equipment for approximately 1,500 airplanes to be constructed during the next 16 months.

Willie Willingham flew the new Thadon all-metal monoplane in for the show. He was not surprised by Mr. Thadon, who drove down in order to have a car. Automobiles were needed to run 13 miles from and to Los Angeles. The new Thadon embodies several new features.

When the airplane manufacturers' section of the National Aeronautical Chapter of Commerce met in the big tent immediately west of the pavilion, speakers were forced to compete with cutting drafts from the cafeteria and army and navy planes above overhead.

In addition to placing an exhibit in the show, Union Oil Co. provided the broadcasting of information and news of the show over three California radio stations. Don Perkin, announcer, only worked at the talking job 12 hours daily.

Kaiser Aircraft Corp. demonstrated a plane on the field. Bob Stanley flew it.

Walter Beech flew in from Wichita in a new Travel Air Transport, which carries six passengers and two pilots, with dual control of course. J. M. McCaughey was the pilot. O. G. Harrod, salesman, and Markis Murdoch, newspaper man, accompanied them.

Three Travel Airs were on nearby Clover Field for demonstration purposes.

W. M. Gray flew in from Palm Springs, Calif., to tell folks about their new transport airplane. It is a mile long and a quarter-mile wide. At present workmen are

building three steel hangers and enclosing the field. Some a daily passenger service to Los Angeles will be inaugurated. G. E. Flaherty in the Ryan monoplane will operate the line.

The unveiling of the new Douglas Ambassador was right poetry, with a motion picture touch. When the plane was unveiled Gary Cooper stepped from the cockpit. Norman Spruill at Ambassador Airways acted as master of ceremonies, while Don Douglas, Harry Wetmore, Harry Arthur, Jr., were present to the crowd.

The race-exposition-convention business proved tough on some folks, especially representatives of the aviation magazines. These goag at 600 and 13 miles apart.

Approximately 900 individuals examined the exhibits and booths in the exposition building. A large crowd was present even before the doors opened. Fully 1,000 persons viewed the exposition and races, including navy and army pilots and mechanics, soldiers and police officers, as guards, and program and solo job operators.

And thanks to the women of Inglewood, where the show really was held, and nearby communities, beautiful flowers decorated the hall. Fresh duty?

Just to digress a moment, Admiral Moffett couldn't get his hat back without a salute. The boys apparently did not know an admiral from a gas crawler.

T. C. Ryan, Sevens engine distributor flew in a couple of days after the show started in his Monocoupe to attend the booth, held jointly by Ryan and Pacific Technical University.

Bradford, Penn., and M. C. Lutz and D. C. Thro of the Kaskaskia Refining Co. to grant the show.

The show was held almost in the heart of the oil producing district, west and south from Los Angeles. Oil well burned on Thursday and contributed nothing to the crowd's entertainment and the owner's expense.

Get 'em while they're hot—see 'em soon comes a (fine—see old pigs, right?—see—see. I'm sorry, there aren't any more seats.

While the show was in progress, Maj. Lester D. Gardner spoke to the City Club of Los Angeles and congressional members. California on having "Swan airports, more improved planes, more airplane factories, more passenger air lines and more air passengers than any other section of the United States."

(Continued on page 937)

THE BUYER'S LOG BOOK

Ray Day Aircraft Piston

ANNOUNCEMENT has been made by the Ray Day Piston Company, 17 West 60th St., New York City, manufacturers of aluminum alloy pistons for aircraft equipment and replacement, of a new type of piston especially adapted to the needs of aircraft engines. Replacement pistons will be manufactured for such engines as the Liberty and Curtiss OX series.

The outstanding feature of the new piston is that its skirt expansion can be completely controlled through specific design, making it possible even to obtain a negative skirt expansion with a positive expansion of the head, without bowing the skirt. The piston head is set away from the skirt as in the standard Ray Day piston. Two trusses are riveted down from the outer diameter of the head to connect the piston pin bosses to the head. Fringe parts of the pin bosses and the pin bosses are of the pin bosses, connect the bosses to the two dipper slide halves.

When the head expands under heat, the bosses will move outward, riding being provided to prevent deflection of the connecting supports. The bosses in turn, through the ribs to the skirt, will tend to pull the skirt action inward to offset the normal expansion of the skirt. The piston is designed so that the approximate skirt clearance is about 0.001 in. per inch of bore.

Weights of the new pistons correspond very closely to those of the solid skirt type in use at present. The use of four rings per piston is recommended as a minimum to assure low head temperatures, especially with air-cooled engines. A special aluminum Ray Day alloy is used for the making of this piston. This alloy is close grained and is extremely hard and strong and has a very high conductivity.

Steel Disc Wheel

A DOUBLE disc wheel of the deep center type is being manufactured by the Johnson Airplane Supply Co., of Dayton, O. It is of welded steel construction, weighs 30 lbs. and fits either the 24-in., 30-in. or 36-in. axle sizes. The wheel is durable, strain-free and noiseless. Hub and bearings and alloy brake drum to fit standard expanding brakes are part of the equipment. The weight of the wheel with bearings and brake drum is 250 lb. and the weight without bearings and brake drum is 21 lb. It is made for two different uses of axle.

It is constructed by the Material Division of the Army Air Corps at Wright Field the wheel withstands a spiral load of 11,000 lb. without serious deflection and a side load of 3,460 lb. without permanent set.

Shepard Hangars

AIRPLANE HANGARS built along the same engineering lines as its other types of steel buildings are now being manufactured by the Arthur I. Shepard Corp., architects and manufacturers, with offices at 11 Broadway, New York City, and shops at Irvington, N. J. These hangars are of permanent construction designed to meet the building codes of the principal cities throughout the country. They are fabricated of structural steel, all main members being 1/2 in. in thickness with 22 gauge corrugated galvanized steel roof sheets and galvanized steel siding, all main members are bolt riveted together in the shop with large 1/2 in. gusset plates and provide clear span with no center columns.

The side walls of the buildings are fabricated in the form of steel sections usually about 8 ft. in width and of the height desired. The vertical members of these sections consist of channels or heavy rolled steel angles, all members being bolt riveted together in the shop with 1/2 in. gusset plates. When these sections are bolted together there is formed an "I" beam or "T" beam on which the trusses rest.

Before disassembling the reinforced steel roof and heavy galvanized sheet and is moved with copper rivets to these sections which are bolted with shearing of the sections and placing of the roof in the field, this greatly reduces the time of erection of the building and besides it gives the building a much better appearance than if the sheets were applied in the field.

To erect the building all that is necessary to do is to bolt together the side wall sections, raise and bolt on the trusses, joists and braces, apply the roof sheets and glue the roof.

Dot Lubricator

INCLUDED AMONG the products of the Dot Lubricator Equipment Co., a division of the Clay Fowler Co., Cambridge, Mass., is a portable electric lubricator designed to operate from an electric light socket and controlled at the nozzle. The unit requires a built-in air pump and is supplied with Alerene and Zerol lubricants.

The Dot Lubricator is mounted on two wheels and two casters and has a wing in the top which may be attached to a crane for lowering into pits or transporting to any part of the engine or garage. The tank has a gross capacity of 21 lb. and may be filled from the top by hand or through the hose by means of the barrel pump. The tank is built of stainless steel and the joints between the main reservoir and the cylinder are brazed. Leak washers are used at all important points and there are leakings in both air and grease pump. Gaskets are used at all important machine flange points.

A pressure of 60 to 80 lb. is created by the air pump, ensuring a dependable delivery of grease to the grease pump, which develops a pressure of 2,200 to 3,000 lb. and delivers grease to the fittings at the rate of 11 cc. per min.

Burgess "Snap Lite"

A NEW flashlight product of unique design and low price is being offered through the regular jobber and other channels by the Burgess Battery Co., of Madison, Wis. The "Snap Lite" as it is called by the manufacturers, is a pocket light adaptable to more than 90 per cent of possible flashlight uses. It is small, light, of light weight and ingenious design.

The Snap-Lite has no case, spring or lens and the 1 1/2 in. No. 1 Mazda lamp is removable and protected by the "snap-off" set which, when opened, forms a constant reflector for the lamp. Switcher and lamp are removable and the contact is closed by simply snapping open the top. The snap action is positive assurance that the circuit is broken when the light is not in use, thereby saving the battery.

Burgess chrome batteries are used in the Snap-Lite which ensures the long life of the flashlight. The product is made in five different color finishes and the snapper top is nickel plated.

Some Side Lights and High Lights

(Continued from page 937)

And Rear-Admiral Moffatt told the Chamber of Commerce-Opticians Club that one long dark drizzle will ply between New York and Los Angeles and between Los Angeles and Honolulu.

And W. P. Ballantine of the Pacific Scientific Co., told the S. A. E. that the day of "left" flying must will give way to insurance flying.

Paul J. Chamberlain plans a glider factory for Venice, Cal., he stated. The glider is made weighs about 175 pounds and can be manufactured in steel at \$100.

One of the significant announcements of the exposition came when the Lockheed Vega System made public the formation of Pan-Am Airway, the first attempt to link automobile and airplane transportation. The first trans-oceanic plane will be used in the daytime. At night new motor coaches will be used. The line will extend from San Diego to San Francisco to Chicago. The first plane is now being constructed. Passengers will be able to reach Chicago from Los Angeles in two nights and one day. The Bath Air Yacht will be powered with 1000 and Whitney Hornet engines. Passengers from Los Angeles to Chicago will board the Silverchase in the evening, begin the day journey at Phoenix and after 14 hours in the air disembark at St. Louis for the rest of the trip.

Wallace Beery bought a new Travel Air, Wasp powered, early in the week. It is specially fitted inside and equipped for night flying.

The real main issue now people do not travel by air because they are afraid they might be killed, Secretary Warner told the S. A. E. And he declared the industry, with plenty of reason and evidence on its side, expects fear, should give constant evidence of safety.

After the first few days the exhibition decided their

judges should admit that to the ground school. A yacht with race officials fixed that rule detail.

Telephone calls cost approximately 30 cents each \$12.50 for the installation and 10 cents per call. Figure 1938.

While the show was in a sense a western show, New York and Wichita was particularly well represented.

What sales had been made were not available as the show was in the Curtiss Aeroplane Co., whose salesmen arrived after the show story appearing in this issue was written, announced some satisfactory contacts and business were made and contracted during the show.

Many boys were interested in everything. They were also often around the school booths among literature and information.

Mines Field is now the official Los Angeles Municipal Airport and Malheur Airfield plans to make its flying headquarters there.

The Six Cross Country Air Derbies

(Continued from page 938)

described E. E. Brough, who flew a Laird, and John Livingston, who flew a Vultee, as close rivals, that neither could be certain he had won. Brough placed second in the New York Spokane race for planes of this engine power last year and, by coincidence, carried with him the same elderly passenger this year at last. Charles Thompson.

T. S. Coffey, flying a Eudl Aurore, and as passenger had 65-year-old aunt Mrs. E. W. Peardner, the only women in the field and the first so far known, in particular.



R. Hoke and J. Toney in front of the Stinson Model which finished second in the Class A New York to Los Angeles derby.

temper in a transcontinental race, though there have been a number in the National Air Tours. King Davidson had flown only a few times, even for long distances, before taking off on the race. "It was just a free trip," he said.

Coffey declared that she had seemed to "enjoy every minute of it, even when we were over a fog, hunting a field and nearly out of gas."

Bad weather in the east was responsible for the absence from the finish of "Speed" (C. W.) Williams, who ended up his plane in a mountainside in Pennsylvania after he had run out of gasoline while heading toward a fog belt.



Karl Rosend, winner of the Class A New York to Los Angeles air derby.

a landing field. Holman won last year's race. Harold Raft's Lockheed Vega, making a landing under starter conditions, nose over. Fortunately the propeller was horizontal as the ship came in. But he got, day a hole in the winging gear and toward the plane back onto its landing gear. Gasoline was obtained and the plane flown away, finishing soon after the leaders. None of these planes' engines was injured. Although this was a hard luck win. This engine developed trouble on the Tuscon-Yuma leg of the flight, one cylinder eventually being badly damaged. There was nothing for it but to send a new engine, which the pilot fortunately was able to obtain. He worked all night to get it into his plane and the last legs of the race at a furious pace despite his weariness.

Delayed on Hour by Fog

The next to last leg of the flight, that from Yuma to San Diego, was delayed nearly an hour because of reports of fog along the Pacific Coast and at San Diego the planes were held at the control point for a time in order to make their arrival at the field coincide with the afternoon's program.

All but one of the planes in this race had Whetstone engines. The only other entry, a Cessna with a Grossman power plant, finished last, though the position may be changed by official computation of elapsed time.

After Ballough and Wood, planes arrived in the following order.

Charles W. Meyers, Waco; T. A. Wells, Travel Air; T. S. Cully, Dair; Edward G. Schick, Mooney; Joe McKinney, Fieser; Earl White, Lockheed; Paul Egan, Travel Air; J. Sadoway, Cessna Model B; Raymond Merritt, Ryan; M. W. Whitall, Fairchild; G. C. Davis, Cessna.

The official times of the first seven Class B transcontinental planes are as follows:

Place	Pilot	Hours	Minutes	Seconds
1	John Livingston	22	56	59
2	E. B. Wood	23	10	24
3	J. F. Wood	23	31	8
4	E. Schick	23	53	8
5	C. W. Meyers	24	4	53

AVIATION September 25, 1928

Place	Pilot	Hours	Minutes	Seconds
6	T. B. Cully	25	11	29
7	A. T. Wells	25	12	1

Robert Cartwell, Los Angeles pilot, led throughout in the Class C New York to Los Angeles race from the metropolitan to his home city and was landed on the evening even before the official time had been announced. Cartwell was followed in arrival by C. D. B. Collier, round-the-world traveler, and Edward J. Brokaw. All three came in within 12 minutes. Cartwell, flying a Lockheed plane built in Los Angeles, was the favorite and excited cheers when introduced to the crowd from the announcer's stand, though because he and all his fellow racers arrived in the midst of the Class B races from Oakland, their actual appearances over the field evoked little attention.

Cartwell and the weather was fairly good all through and much better over the New York-McKeesport stretch than had been reported earlier when the Class B transcontinental racers flew over it. Each of the competitors who finished will receive a prize—\$5,000 to the winner, \$2,500 to the second place man and \$1,500 to the third place man.

H. S. Myers was from two fellow transmen in the Class A California Air Derby, flown from San Francisco to Los Angeles in connection with the National Air Races and the later city. Myers joined out Charles F. Dyer, who flew an experimental plane developed at Dyer Aircraft, Mythen, Dyer and Jack Frye, who came in third, one Los Angeles resident. Mythen flew a Simplex monoplane. Vern Roberts was fourth and W. D. Wright fifth.

This was a race won partly on the speed of the plane, it appeared from the pilots' accounts, though skillful handling



William H. Drury, winner of the Wendler, Cessna, in Los Angeles air derby.

is evident from the low times shown for a trip that, by air line, measures nearly 370 mi. Good weather was the rule throughout except over the San Fernando Valley near Los Angeles, the pilots said. At that point considerable haze was experienced. Pilots said the air was smooth and flying easy except for the haze and some roughness encountered as they plunged down after crossing the Tehachan mountains.

Most of the fliers in this race flew charted routes, just as did those in the longer contests, and a feature was that a number of them made use of automobile maps, supplied by the Automobile Club of Southern California. Others used charts prepared by Capt. W. B. Voornoyes, of Oakland.

AVIATION September 25, 1928

The establishment of a control point at Visalia insured somewhat the choice of routes to be taken, while it was not small, because of the topography and the short distance of the race. The fliers generally headed direct from San Francisco along the western shore of San Francisco Bay to Santa Clara Valley, decided that, crossed the Coast Range through Fresno and the east of the nearby passes and then followed the eastern line of the Coast Range south of Visalia.

After the 30-mi. stop there, they scattered somewhat, but Mythen, Dyer and Wright, as well as several others, then went on direct over the Tehachans. This required high, some of the planes ascending to 7,000 ft. over the more rugged portion of the way. The valley portions of the race were flown at 500 ft. or less.

Metaphor as Passenger

Wright was the only pilot in the race to carry a passenger. Leo Berger, his assistant, rode with him to Visalia, where he spent the control period chiding the plane. There he was picked up by another plane and brought on to Los Angeles, where Wright made the transcontinental trip alone. Several of the pilots spoke highly of the efficient manner in which the Visalia control was handled, there being no interference with the planes on the part of the large crowd which gathered to see them and the delays in getting away.

The order in which the other contestants finished was as follows: Muel Campbell, Travel Air; W. R. Williams, Monocoupe; Iren Olsen, Bivon Mercury.

The official standing of the entries in this derby is as follows:

Place	Pilot	Plane	Engine	Time
1	EL S. Mythen	Simplex	Komper	3:10:20
2	C. F. Dyer	Lockheed-Tags	CSS	3:19:00
3	J. D. Olsen	Monocoupe	Vette	3:21:00
4	V. Roberts	Monocoupe	Vette	3:26:05
5	M. Campbell	Travel Air	CSS	3:40:50
6	R. Williams	Monocoupe	Vette	3:45:25
7	J. Olsen	Bivon Mercury	CSS	3:46:20

The final standing of the Class B Oakland to Los Angeles flights are as follows:

Place	Pilot	Plane	Engine	Time
1	J. S. Cully	Travel Air	Whetstone	2:35:49
2	E. B. Wood	Lockheed	Whetstone	2:37:18
3	D. C. Warren	Travel Air	1800 Hmo	2:37:37
4	J. Noyes	Travel Air	Whetstone	2:39:00
5	L. Meyer	Bell	Whetstone	2:39:23
6	H. Kraft	Southern	Whetstone	2:48:44
7	L. Phangas	Earleford	Whetstone	2:42:39

William H. Drury, who finished more than six hours ahead of his only transcontinental competitor, was acknowledged the winner long before the official time had been computed for the Wendler-Los Angeles race. Drury was piloted by Kennedy Whyte. S. T. Sanderford's Martin was forced down at Fresno, about without striking down the crash of the race by engine trouble on board or as a pilot Drury had completed the course. Had he arrived by 5 o'clock that afternoon he would have won the third prize of \$1,500. E. V. Hemple, owner of the plane, was with Sanderford as a passenger.

Drury's elapsed time was 2:35:49, or he in the neighborhood of 20 hrs. The distance was 2,345 mi. He was one of the youngest pilots competing in any of the Los Angeles events, being but 22 and having less than 250 hrs. in the air. He took his first lesson in flying less than two years ago. This was his first long cross country flight.

The Aerial Events at Mines Field

(Continued from page 101.)

also who were not able to reach the coast in time to compete.

Wednesday was a beautiful day at Mines Field, Classes B and C in the Transcontinental, and Class B in the California Derby all finishing at once. Twenty-five planes finished these various races between 2:00 and 3:00 o'clock in the afternoon. As they shot across the finish line, on several occasions three or four at a time, the brilliant color contrasts and varied types of construction were of great interest to the crowd. Of particular interest were the golden Fokker "Super Universal," flown by E. J.



Left—Lance George R. Adelson, winner of the Mason M. Patrick Trophy for 1928. Right—Lance Ernest H. Larson, winner of the John I. McNeil Trophy for 1928.

Brooks, and the winning orange Lockheed flown by Baker Cartwell in the Class C transcontinental, and the white Traveler flown by Paul Bruffell, the black Pacer monoplane flown by Iren McKinney, and the red Cessna flown by Jay Sadoway, in the Class B transcontinental race.

Special event No. 7, a closed event for pilots of the First Aerial Group, was won by Lance E. H. Lawson at an average speed of 154.94 m.p.h. Lance W. H. DeLoitte was second with 154.3 m.p.h., and Lance D. M. Robinson was third at 153.4 m.p.h. Lance J. B. Madison, Lance H. L. Scholten, Lance B. G. Lewis, Lance R. Stevens, Capt. Victor H. Simulas, Lance Rigma, and Lance F. O. Olsen also finished in the order named. The race was 12 laps over a 10 mi course for the John I. McNeil trophy. The race was won last year by Lance Iren A. Wooding at a speed of 158.6 m.p.h. Flying a Curtiss P-4. The planes entered this year were all Curtiss P-4s. This trophy has been contested since 1922. The fastest time yet recorded being made by Lance, Cyrus K. Bette, 1:55:42 m.p.h. Flying a Curtiss P-4 with Curtiss D-12 engine at Dayton, Ohio, in 1924. Since that time the speed has dropped little each year.

Special event No. 8, a closed event for pilots of the Third Aerial Group, was postponed until late in the afternoon to permit the safe arrival of the various cross country civilian fliers. This race was also 12 laps around a 10 mi course, the planes being standard Army attack type powered with Curtiss D-12s. This was the first annual race for the Mason M. Patrick trophy and won by Lance G. R. Adelson, speed 129.3 m.p.h. Second,

Lead H W Andersen, speed 339.0 mph, third, Latent. E. H. Baldwin, speed, 188.08 mph. The flight was finished in the following order: Latent H W Andersen, Latent G. H. MacArthur, Latent G. H. MacArthur, Latent J. G. George, Latent H W Gross, Capt H N Hines, Latent J. G. Williams, Latent H M Newstrom, Major J. H. Jones. After the other two races, the first of 15 second victories and race against time. This race was isolated by the bridgekeeping and dangerously low aircraft banks at the poles of Latent H W Andersen. Although in the preceding race there were often four and five planes running for the poles and positions of planes changed often, in Latent No. 6 there were no changes at any time from the order in which the pilots took off.

Among spectators introduced on the microphone on Wednesday were William Gibbs MacArthur, Ruth Elder, Arthur Whitford, Helen White and Sam Wilson.

Thursday was "Pittsburgh Burn Day" and also the longest day from point of attendance experienced up to that day at the air races. With Colonel Landburgh meeting with the "Three Musketeers" and Col Arthur Goddard from New York in his Lockheed Vega, the "Yankee Doodle" the stands were packed beyond the main and it was necessary to place several thousand folding chairs across the lawn to accommodate the crowds.

Landburgh Takes Part in Squadron Flying

The formation flying of the 1st Pursuit and 95th Pursuit Squadrons was featured by the sighting of Landburgh in plane No. 13. The V1020 Squadron later performed the most spectacular mass maneuver that had been shown when they were hoped at a low altitude with the whole squadron of nine planes in perfect squadron V formation. Flying by in review the nine planes were in perfect 9 abreast alignment and seemed close enough together for a wing leader to have sailed across the entire group without having any sense between planes.

Event number one, distance forty miles, eight laps around a five-mile course. Latent MacArthur and Gerhardt crashed. In order to make it a race James S. Charles, flying his Curtiss OXS Eagle, and Mark Falk, flying the Rock, OXS, agreed to race. Derpherry dropped out on the first lap with an engine trouble. Charles won at an average speed of 79.748 mph, with Falk second at 78.973 mph.

The appearance over the field of E. H. Hines, flying his top "Halo Butler", powered with the 2-cylinder 20 hp Bristol "Camo" caused great excitement in the crowd. With a wing speed of only sixteen feet the tiny airplane seemed to cut the air with bullet-like speed as it flashed back and forth across the field.

The special event No. 6, open to military observation planes only, consisting of the engine Redders. The group, was won by Lieutenant Robert E. Hines, an average speed of 142.3 mph, after an uneventful race. The other finishers in the following order: Latent Pick, Latent Ellis, Latent Young, and Latent Taylor. All flew Wright "Corsairs" with "Wasp" engines. This race was no lap or time race.

The feature of the afternoon took place at 3:30 P. M. when Art Goddard's White Lockheed "Yankee Doodle" soared in over the field from the east just as the "Sea Hawks" were reaching the climax of their stunt program. The crowd, realizing that Goddard had won the race, was in a state of excitement. Hundreds of persons ran across the field to greet the winner, while Mrs. Goddard, Colonel Goddard's mother, waited in the announcer's stand to greet her son. The disappointment was intense when it was learned that the "Yankee Doodle" had stopped for an engine and two minutes in Prescott Area, for gasoline. Since an

other entrant reached Alton Field the race stop race was announced to restart. Goddard and the first event of the day across at about 10:00 A. M. alight, but despite pushing his engine all the way at full throttle a strong head wind out down his speed to greatly that his gasoline supply became dangerous. Low over Alton and it was necessary to descend and refuel before continuing. An interesting event of the flight occurred during the night while battling a storm over the mountains east of Alton, when Harry Tucker, after reaching the main tank with gasoline from five gallon cans, attempted to three.



Alton finisher of Al H. White in his rebuilt Curtiss pusher

the empty area overhead and saw the wheel tear the door of the cabin off outside. This rupture unbalanced the flies and slowed down the plane somewhat. Prince George, of England, Colonel Lawrence, designer of the Wright "Whirlwind", Captain Brown and Janet Gaynor of movie fame and other spectators were present in the stands to see Goddard come in.

A most interesting part of the afternoon's program was Ruth Elder's flight with Al Wilson in the 1930 type pusher biplane. While ascending and diving in front of the crowd, Elder, Ruth Elder lost one of her shoes and had to come down hard and face an enthusiastic crowd of admirers.

The first real civilian race of the 1938 National Air Race program got under way at 4:30 P. M., when one entrant took off for the first heat of event number ten, 10 laps around the Lincoln course, open to civilians flying planes equipped with engines under 350 cu in. The four winners in each heat were permitted to enter the final event on Friday. Earl Rowland, flying a Cessna Model A with a Warner "Scout" engine finished first in 27 min. 21 sec. at an average speed of approximately 102 mph. Robert Deke, American Mail with a "Scout" engine, second, time, 28 min. 28 sec., average speed, 104 mph. H. S. Myhrum, Simplex Red Arrow with Warner 2-cylinder engine, third, time, 29 min., speed, 102.8 mph. Fourth, Ray Selmon, flying an OXS Travel Air, time, 29 min. 52 sec., speed, approximately 100.3 mph. Jack Frye with an OXS engine Eagle, second Turner with an OXS Berkey biplane, Lee Fleasman with a Hallett engine Eagle, finished in the order named. Eugene Denker, flying an OXS Travel Air, was forced out of the race on the third lap for engine trouble. Derpherry, OXS Travel Air, failed to complete the last

lap, due to engine trouble. The heat was quite spectacular with the leaders closely bunched at the completion of the first lap. Rowland in the Cessna, flew very low on the second lap and took the lead. Myhrum, in the Simplex, flew dangerously low and close to every pole, but could not keep pace with the Cessna. The American Mail, flying the Simplex, by Myhrum, engaged in a thrilling battle at the home pole in the fifth lap, with the Meib in taking the lead on the next lap. Each of the three leaders flew each faster than the preceding one and the last lap finish of all. Rowland's last lap was the fastest lap in either heat, being completed at a speed of 102.33 mph.

The second heat proved to be uninteresting race for the flight of Tex Rankin, who cut all poles cleanly, and whose first lap was not only his fastest, but was the fastest first lap flown in either heat. Tex Rankin, with an OXS engine, took first in 29 min. 17 sec., at a speed of 102.1 mph. The others to finish were in the following order: Vera Roberts, Monocoupe, W. H. Emery, Traveler, Carey Jones, Captain Zoloz, A. H. Kinsler, Chrysler biplane, John Carberry, Mely biplane, Arthur Edison Eagle, Don Phillips and Mark Falk dropped out with engine trouble. The heat was slower than the first one and was closely fought by the time that Vera Roberts cut in on the poles with her late Monocoupe. After completing the race, A. H. Kinsler provided a move with a thrill when he landed and tied up the runway into the area, evidently failing to see several officials grouped to the finish line. They were fortunate enough to be able to run to one side and avoid the crash, but a chair in which one of the commentators had been sitting was demolished.

Event No. 3, scheduled for 6:00 P. M., was postponed until Friday, due to expanding darkness.

Crowd Gathers Early

On Friday, the stands were filled before the aerial program was started. Colonel Landburgh again went up with the other two of the Three Musketeers and put on a fantastic stunting exhibition that was even better than their showing the day before.

The first event of the day, Event No. 3 on the official program, was flown at noon. It was a civilian free-for-all of 50 or 20 laps, for any type of plane powered with an engine of 220 cu in. displacement or less. Art Warren, flying his own Hispano powered Travel Air, took first prize with a time of 24 min. 38 sec. and an average speed of 131.1 mph. Randolph Sinclair, flying his own Eagle, powered with a Curtiss G engine, was second in 25 min. 16 sec., with an average speed of 120.3 mph. T. Tappet, flying an American Mail, powered with a Warner Scout and entered by Helen Deke and her son, was third in 25 min. 39 sec., with an average speed of 119.7 mph. H. S. Myhrum, flying a Simplex, was fourth, entered by South and Rowland, was fourth in 28 min. 14 sec., with an average speed of 106 mph. It was a run-away race for Warren who lapped all the other entrants. The excitement was provided by the alias of the Meib and the Simplex, which did some close flying together in the poles until the seventh lap, when the Meib pulled ahead and proceeded to fly away from the Simplex.

The next event of the program was Event No. 4, a civilian free-for-all 75 mi. 15-lap race for open cockpit planes powered with engines of 300 cu in. or less. E. E. Balogh, flying a Whirlwind powered Laird plane, entered by the Laird Company, flew away with the race in 33 min. 55 sec., at an average speed of 122.9 mph. John P. Wood, flying his Waco, Whirlwind, was second in 34 min. 4 sec., with an average speed of 122 mph.

John Livingston, winner of the class B transcontinental derby, was third in 34 min. 24 sec., with an average speed of 124.8 mph. Charles W. Meyers, also flying a Whirlwind Waco, was fourth in 34 min. 28 sec., with an average speed of 120.5 mph, and T. A. Wolfe, in a Travel Air D4000 (Whirlwind), was fifth in 34 min. 38 sec., with an average speed of 120.1 mph. The other entries finished in the following order: Leo Nansen, Travel Air, Whirlwind, 36 min. 5 sec., 126.6 mph; D. C. Warren, Travel Air, 3:00, 180 Hines, 36 min. 30 sec., 124.4 mph; Douglas



The Navy parachute payers marking the ground after a first jump

Commercial Monocoupe (Scout) Lee Fleasman, Eagle, Whirlwind 34, 37 min. 12.1 sec. 119.7 mph. Richter, Eagle, Whirlwind, 37 min. 40 sec. 119.3 mph. Balogh took the lead at the start of the race and held it throughout. From the cords in thousands of hands a sharp jerk with Waco, but finally passed him on the thirteenth lap.

The next event was No. 9, a Navy patrol plane race of 50 mi. in two laps. Last John G. Greenleaf, flying an F2B, finished first in 30 min. 18 sec., with an average speed of 146 mph. Latent Edge A. Greenleaf, in F2B, was second, 30 min. 30 sec., with an average speed of 146 mph, and Capt. Tom W. Driford, in an F2B, was third in 30 min. 35 sec., with an average speed of 145 mph. Latent Warren W. Hines was fourth in 30 min. 55 sec., with an average speed of 144 mph. Latent Ralph G. Allen, in an F2B, was fifth in 30 min. 53 sec., with an average speed of 143 mph. All entries were powered with Wasp engines. A new Douglas Wasp par course, powered with a Wasp engine, was scratched. This race was also particularly exciting. However, it is interesting to note that no engine trouble of any sort had developed as any military or naval race thus far.

Event No. 15 was flown next. This race was a 30 mi. 10-lap light airplane speed and efficiency affair and was

was by E. B. Herli, in his own Hirth monoplane. "Baby Belle," powered with a Bristol "Cervid" engine. Herli's time was 27 min. 1 sec. and his average speed, 111 m.p.h. Vere Roberts, in a Monocoupe, powered with a Vetus engine and entered by the Mass Aircraft Corp., was second in 26 min. 32 sec., with an average speed of 97 m.p.h. Charles A. LaJette, piloting his own Monocoupe, finished third in 31 min. 33 sec., with an average speed of 95 m.p.h. and John E. Carberry, flying his own Moth, powered with a Cirrus, was fourth in 31 min. 50 sec., with an average speed of 92 m.p.h. Gene Galtbair, in an Ralston sport plane, was fifth in 34 min. 35 sec., with an average speed of 86 m.p.h. and James R. Williams, flying a plane entered by the Sackley Airplane Co. and powered with a Sackley radial, was last in 41 min. 59 sec. with an average speed of 73 m.p.h. This place was known as the "Flying Daughters" and did not make a very good impression on the crowd. Herli took the lead at the start and flew some 300 ft. above the other entries, lapping the Flying Daughters three times. Vere Roberts, in his Monocoupe, did some pretty flying on the pylons.

Then came Event No. 11, a 50 mi. 30-lap race for two-place National Guard planes. It was won by Lieutenant Robbins, in a Douglas O-42 engine, powered with a Liberty, in 24 min. 1 sec., with an average speed of 125 m.p.h. Lieut. Daniel V. Kuma, of the Colorado National Guard, flying a Liberty powered Douglas O-42, was second in 26 min. 40 sec., with an average speed of 122.6 m.p.h., and Capt. T. W. Symons, Jr., flying a Douglas O-42, was third in 25 min. 26 sec., with an average speed of 118 m.p.h. H. H. Robinson, in a Douglas O-42, powered with a Liberty, was fourth in 26 min. 2 sec., with an average speed of 115 m.p.h. and Lieut. Jack B. Albrecht, flying another Liberty powered Douglas O-42, was fifth in 26 min. 28 sec., with an average speed of 113 m.p.h. This race was successful.

Event No. 10 was a 50 mi. 10-lap race for the 96th Pursuit Squadron. All entries were Curtiss Hawks, powered with the Curtiss D-12 engine. First place was won by Lieutenant Cornelius in 20 min. 18 sec., with an average speed of 146 m.p.h. Second place was won by Lieutenant Woodling in 20 min. 23 sec., with an average speed of 147 m.p.h. Third place was won by Lieutenant Strickland in 20 min. 40 sec., with an average speed of 143

m.p.h. and fifth place was won by Lieutenant Mallory in 20 min. 51 sec. with an average speed of 146 m.p.h. The finish order of the other entries was as follows: Lieutenant Ivins, 20 min. 51 sec., 143.6 m.p.h.; Lieutenant Williams, 20 min. 54 sec., 143.5 m.p.h.; Lieutenant Birk, 20 min. 57 sec., 143 m.p.h.; Lieutenant Gregg, 20 min. 59 sec., 142.8 m.p.h.; Lieutenant Meadow, 20 min. 9 sec., 140.6 m.p.h.; Lieutenant Hopkins, 21 min. 30 sec., 140.5 m.p.h.; Lieutenant Cornelius took the lead from the start and continued to increase it until he dashed across the finish line. He nearly had a collision with Mallory as they crossed the finish line together with Cornelius on the inside and Mallory on the outside with a lap to go. Cornelius crossed at Mallory's head on the pylons and for a moment it looked like a sure crash, but the crash was avoided by skillful and quick maneuvering on the part of both pilots.

Stunt Competition in Parachute Event

Event No. 7 was a parachute jumping contest. Sixteen jumpers stepped off at an altitude of 1,500 ft. and attempted to land within a 200-ft. circle marked out on the field. The event was won by Sergt. George W. Walling, of March Field, Calif., who landed 14 ft. 7 in. from the center of the circle. George H. Brink, of the San Diego Naval Air Station was second with a distance of 96 ft. Theodore Dvorakowski, of the San Diego Naval Air Station, was third, with a distance of 136 ft. and Harry W. Beach, of March Field, was fourth, with a distance of 141 ft. 10 in. Walling and Brink were the only two jumpers to land within the circle.

The closing serial feature of the day was the arrival of another unsuccessful transcontinental non-stop entry, Lieut. Jack Jacma, who landed his Bellanca monoplane, "Columbia," at 6 o'clock, after having been flown down in Texas.

Stanley's crowd was estimated to be over 50,000 persons. The program of the day's events was featured by a radio broadcast made while descending in a parachute, Colonel Lundberg flying Al Wilcox's 1940 model of the Corsica pariter, Anne Earhart's arrival in her own DH 602a, and Earl H. Barger's arrival in his Vought B-1

luna, in which he made an unsuccessful attempt to fly non-stop from New York to Los Angeles. Prior to the beginning of the race, Captain John Edwards led a formation of D-11 observation and P-73 training planes from March Field, which drew considerable applause from the crowd. A one-place hop by a U. S. Army squadron provided additional thrills and the winning calculations were gleaned by a three-place formation, led by Lundberg, which did 29 successive laps.

The first racing event of the day was Event No. 5, a civilian free-for-all speed and efficiency contest for all types of planes, powered with engines of 800 cc. in displacement or less. This race was won by L. F. Schenck in a Whirlwind powered Bell Aircraft entered by T. B. Coffey. The time was 25 min. 16 sec. and the average speed was 118.74 m.p.h. Louis Meiner flying a Whirlwind powered Bell special airframe, entered by the Delta Company, was second in 25 min. 42 sec., with an average speed of 116.74 m.p.h. Third place was won by Victor Delta in a Whirlwind powered Bellanca C-15 monoplane. Delta's time was 26 min. 40 sec. and his average speed 104.65 m.p.h. The Bellanca C-15 was entered by Harry de Pont. Jay Sedowley, flying a Whirlwind Cessna Model B, entered by the Cessna Company, was timed in 23 min. 21 sec. with an average speed of 126.5 m.p.h. The race was disrupted, however, for flying on take off when he required 600 ft. The time which he took to get to the air was only sustained by the Cessna plane lapping all of the other entries.

Continued Race Appearances

The second race down on Saturday was Event No. 6, a 100 mi. 10-lap civilian free-for-all race for any type of open planes, powered with one, two or three engines and carrying a minimum load of 1,000 lb. Robert Cooney, winner of the Class C transcontinental air derby, flew a Wasp powered Lockheed Vega, entered by Eric P. Halbertson, was first in 21 min. 25 sec. with an average speed of 190.8 m.p.h. Arthur Spidel, flying a Wasp powered Vega, entered by Henry Tucker, was second in 21 min. 28 sec. with an average speed of 197.7 m.p.h., and Lee Schenck, flying a Whirlwind Bell Aircraft entered by T. B. Coffey, was third in 22 min. 3 sec., with an average speed of 180.6 m.p.h. The order of finish for the other entries was as follows: C. B. D. Colby in Wasp powered Fairchild FC-72, entered by the Fairchild company, 23 min. 28.35 sec., 177.7 m.p.h.; L. G. Meuser in a Whirlwind Bell special Airplane, entered by the Bell Company, 23 min. 47 sec., 176.33 m.p.h.; Jack Fox, in a Wasp powered Fokker Super Universal, entered by the Aero Corporation of California, 29 min. 56 sec., 160.2 m.p.h.; Victor Delta, in a Whirlwind Bellanca C-15, entered by Henry de Pont, 30 min. 40.6 sec., 157.8 m.p.h.; Robert Hunter in his own Monocoupe Schenck 32 powered Team plane 33 min. 4 sec., 167 m.p.h.

Although the official efficiency score was not yet available, the Bellanca was declared unofficially as being the efficient winner. In this race Cooney took the lead at the start and continued to increase it rapidly until he had lapped all other entries with the exception of the Vega, piloted by Art Gobel.

The next event was the finale for Event No. 2, the trials of which had been flown on Thursday. The race was won by Earl Rowland, winner of the Class A transcontinental air derby, flying a Scarab powered Cessna, entered by the Cessna Company. Rowland's time was 26 min. 50.24 sec., with an average speed of 111.74 m.p.h. H. S. Murray, flying a Scarab Red Arrow powered with a Kinner 23 engine, entered by Scarab and himself, was second in 28 min. 6.5 sec., with an average speed of 106.75 m.p.h. and Robert Dike, flying a Scarab powered Anson-

son Model A, entered by himself and Theodore Thery, was third in 28 min. 17 sec., with an average speed of 106 m.p.h. The order of finishing of the other entries was as follows: Verno Roberts, in a Vetus powered Monocoupe, entered by the Mass Company, 29 min. 35 sec., 100 1/3 m.p.h.; Lee Flanagan, in a Bellini powered Eaglehawk, entered by H. Barrell Smith, 29 min. 4.4 sec., 100 m.p.h.; W-



The "Three Husbands," L. to R., Lieut. W. J. Cornelius, Col. C. A. Lundberg, and Lieut. J. A. Woodring

H. Emery in his own Scarab powered Travel Air, 30 min. 54 sec., 99.4 m.p.h.; A. H. Krowder, in an OX powered Scarab, entered by the Challenger Flying Service, 30 min. 54 sec., 97 m.p.h.

Sunday proved to be the biggest day of all as regards the number of persons visiting the exposition building and Mines Field. It was estimated that over 50,000 persons were in attendance. As was the case throughout the entire week of activity, the Army and Navy planes again held the center of the stage on Sunday and put up a wonderful exhibition of formation and stunt flying. Considerable anxiety was experienced by the race committee officials during the afternoon when thousands of persons crowded onto the field and stood among the Navy and Army planes and sometimes dangerously close to planes taxiing into position. However, in fact no could be experienced, no personal injuries were received by any of these thoughtless spectators.

The first racing event on Sunday's program was Event No. 12 a 60 mi. 10-lap free-for-all military pursuit race, again to be flown by the Navy. This race was won by Lieut. T. P. Jones, flying a Scarab #348 pursuit plane, with a supercharged Wasp engine. Lieutenant Jones's time was 25 min. 54 sec. and his average speed was 172.26 m.p.h. Lieut. Edgar A. Crane was second in 22 min. 31.17 sec. with an average speed of 159.6 m.p.h. Lieutenant Herring was third in 25 min. 45 sec., with an average speed of 151.6 m.p.h.; Lieutenant Barnhart was fourth in 23 min. 56 sec. with an average speed of 150.3 m.p.h.; Lieutenant Cronquist was fifth in 24 min. 1.75 sec., with an average speed of 149.8 m.p.h., and Lieutenant Williams was sixth in 24 min. 38.5 sec., with an average speed of 146 m.p.h. All entries, with the exception of the first three, were standard Scarab pursuit



The Navy's three "Sea Hawks" gaining altitude in close formation

plane, powered with Triang engine. Lieutenant Jeter ran away with the race, but he slipped the entire field. Lieutenant Treadwell started that race, but was lamed out by engine trouble on the second lap.

Following this race, the Three Sea Hawks got on their usual perfect performance, the Marsh Field squadron did some beautiful formation work and the Three Mustangs, led by Landwehr, again thrilled the crowd.

The next event on the program was Event No. 54, a 25 mi. flying race for National Guard, Army and Navy Reserve pilots, flying PT winging planes. The event was won by Lieutenant Wynn in 15 min. 59 sec. Last W. P. Williams was second in 16 min. 44.8 sec. Lieutenant Sheppard was third in 16 min. 46 sec, and Lt. Charles Forbes was fourth in 17 min. 7 sec. The race, from the standpoint of the spectators, proved to be rather uninteresting. The speeds were 52.62, 49.46, 49.85, 47.62 mph, respectively.

When followed a special Army race for Liberty powered Douglas planes from Crozier Field. First place was won by Lieutenant Barber with a time of 28 min. 14 sec. and an average speed of 127.5 mph. Lieutenant Goss was second in 28 min. 19 sec. with an average speed of 127 mph. Lieutenant Washburn was third in 28 min. 23 sec. with an average speed of 126.8 mph. Lieutenant Cole was fourth in 28 min. 28.2 sec. with an average speed of 126.3 mph, and Lieutenant Reed was fifth in 28 min. 52 sec. with an average speed of 124.4 mph. The finishing order of the Liberty planes was Lieutenant Barber, 29 min. 26.75 sec. 122.9 mph, Lieutenant Little, 29 min. 44.2 sec. 121 mph.

First Fleet Landing Contest

The next event was Special Event No. 9, a dead stick landing contest. According to information available at this time, the event was won by P. Pynch in an Aeromarine Klemm low wing monoplane, which came to rest in 10 sec. from the time the engine died. An Earlewood took second place and a Travel Air took third place.

In a special climbing and diving race to 10,000 ft. and back, Level T. P. Jeter was first place in a Supercharged Wing Biplane, 29:46, when he made the trip up in 10:00 min. and first in landing and came down to the ground again in 1 min. 55 sec. for a total time of 5 min. 55 sec. A Curtis Hawk, powered with a Curtiss D-12 engine, and flown by Lieutenant Schmitt, was second in 7 min. 5 sec. Lieutenant Hargrave, flying a 1,500 ft. Packard powered Boeing PB5, was third in 8 min. 25 sec. Lieutenant Treadwell, piloting a Wing powered biplane, was fourth in 8 min. 30 sec. The times are unofficial.

An Army attack on a captive balloon did not prove a success, due to igniting five balloons. After the crowd in the stadium, the first four or five balloons sailed over the field, while their passengers consisting of pretty girls, showered flowers on the crowd. Following this show game, Art Gossard and Al Wilson, flying Mustang planes, and a Standard Oil plane, did some formation flying. The Redfield Robber F10 arrived with some celebrities and the last aerial display was a formation of five B-24s monoplane, which flew over the field. This was regarded as the biggest commercial plane demonstration during the event. The biggest reception of the day, since the organization at about 50 supplies and \$100,000 in cash prizes during the flying program.

Although the 1928 National Air Races failed to show any spectacularly fast races, the speeds of the various commercial planes entered were materially higher than those recorded in the previous contests and the increased popularity of the new planes and engines was well demonstrated.

Now that the tunnel and the shoring has all died away and the various cranes and derrickmen are floating on their respective barges or headquarers, a few notes on the activities in connection with the races would possibly be appropriate.

The task of welding together an organization that was only of temporary nature and yet was required to handle some half million spectators, several hundred contestants and exhibitors, and approximately 3,000,000 was a heroic one indeed. Theodore T. Hall, president of the Air Race Association, is certainly to be congratulated on his share of executives and key men for the various difficult jobs that have been performed. Other officers of the Califor-



Front quarter view of the "Jules" Biplane designed by Prof. A. A. Merrill

nia Air Race Association were: Harry H. Ward, vice-president, D. E. McQuaid, secretary-treasurer, Cliff Henderson, managing director, and Lyman B. Johnson, executive secretary. Theodore T. Hall also acted as Finance Chairman and from somewhere or other managed to come up the necessary dollars to stage the meet. Harry H. Ward deserves the thanks of the spectators for his excellent work as chairman of the Entertainment Committee, which provided so many varied forms of amusement. D. E. McQuaid was chairman of the Transportation Committee and did his best with a bad situation. Dr. C. Yang, as chairman of the Field and Grounds Committee, was everywhere on the place with good results always. Robert J. Friedman, editor of Western Flying magazine, was an excellent position to secure the services of the Advertising and Publicity Committee. Dudley Swale, chairman of the Contest Committee, had a man-made job on his hands and succeeded in performing it as a man-made way.

The field organization functioned well throughout the races. There were many motorcycles with sidecars, automobiles, trucks and tractors available. Pilots were readily transported, fuel was served either from trucks or through the pump of planes tacked to them. Planes were handled in other trucks or trailers with good results.

Among other features of the field was a complete weather report station installed by Arden Dwyer in co-operation with the U. S. Weather Bureau and the David Guggenheim Fund for the Promotion of Aeronautics. Every necessary instrument for the collection of data and observation of the weather was installed and operated at this station, weather reports and predictions being sent out hourly.

As some indication of the tremendous amount of flying done at Moret, Field during the races, it is interesting to know that over 10,000 gal. of gasoline and 1,000 gal. of oil were sold to private motorists during the meet and 50,000 gal. of gas and 2,000 gal. of oil were given to contestants. Twenty land truck tractors and underground trucks were installed by the Illinois and Lower companies. Four steel barges were blown on the field by the Virginia Bridge & Steel Co.

Hundreds of private airplanes were flown to the field at various times during the meet and parked along the roads nearby. Among these were such airplanes as the Mothair, Ford monoplane, the Redfield B-10 Biplane and the Boeing B-12 monoplane.

Serving of planes in the continental manner was handled throughout the meet period by a crew of 25 to 100 members of the Warner School of Aeronautics. These men were all in white cover-all uniforms and worn on their heads white crests.

Earl P. Collette, staff photographer for the Warner School of Aeronautics was appointed assistant official photographer for the air race association and obtained some considerable action photos from his post at the home pylons.

Convention Held in Los Angeles

(Continued from page 956)

December and also to attend the international conference on civil aeronautics to be held in Philadelphia, D. C., Dec. 12-14, a meeting which has been called by President Coolidge and the Secretary of Commerce.

Much of the discussion on the second day centered around standards of air load and another. A committee was appointed, and Mr. Jones is chairman. It will consider flying school standards and report at the December meeting. Victor Ross of the Swallow company presented an informal report on the experience of his company in packing airplanes for freight and express shipment. It was reported that of the recent three weeks of shipping he found which would materially reduce weight and costs.

Major Gardner was appointed a special representative to "talk back" the manufacturers at Washington. It was generally agreed that a manufacturer should perform this task.

Standardization proved one of the most important topics discussed during the annual national aeronautics meeting of the Society of Aeronautical Engineers. This body it would be well to explain that in California there are two wings of this society, the northern at San Francisco and the southern at Los Angeles.

Some of the suggested subjects for standardization are as follows:

1. Magnet gauge (measuring in period of interchange of different scales) as an engine
2. Ball type spark plug terminals. A new ball and city combination was discussed as possible replacement for heavy ball type used on automobiles
3. Tires, wheels and rims
4. Propeller shafts and hub ends
5. Tachometer drives
6. Propeller blade ends
7. Engine valves

At the first session, of which E. Foster acted as chairman, three papers were presented. Bill Shedd, general passenger agent for Western Air Express presented a

paper on "Some Phases of Aviation and the Selling of Passenger Transportation." He stated that the important question is that of how to get people to adopt aviation as a means of transportation. Mr. Shedd first asked the rhetorical question "How safe is aviation?" He then proceeded to inform his audience that since the inauguration of the Los Angeles-Salt Lake line in April, 1926, neither a pilot nor a passenger had sustained a finger.

"We know, without a doubt, before we start that our equipment will get through to its destination," he said. "We have a double strand of foolproof paper with something over 100 alignments and inspections that cannot be made on each plane before a start."

Importance of Safety in Travel

Mr. Shedd explained that his company takes extra precautions to insure both passengers and the public the safety of its service. They go even to the extreme of providing lifelines to carry passengers to and from flying fields. Operating expense are high, he said, but he explained that only in this way can passengers be assured absolute safety.

Along the same general lines A. K. Boushette, vice president and general manager of the P. A. T. road a paper on "Airplane Operation between Los Angeles and Seattle." Horace R. Byers, of the Guggenheim Fund for the Promotion of Aeronautics read a paper on the "Future of Aerial Transportation from a Meteorological Viewpoint," which he told the experienced meteorologist, diagonal service, conducted by the Guggenheim Fund, and predicted that aviation meteorological service can increase the efficiency of aircraft independent of its use as a pre-aviation service.

During the second session, of which Aeronautics Secretary of the Navy for Aeronautics, E. P. Warner, presided, standards referred to above were considered. In calling upon C. C. Clarkin, secretary and general manager of the Society of Aeronautical Engineers, to present his paper, "What the Aeronautical Industry Has to Learn from Automobile Standardization," he said that the industry must be able to stand up to Mr. Clarkin without shirking of the society, so closely and at a long time have associated.

Standardization Discussed Briefly

Mr. Warner discussed standardization briefly before Mr. Clarkin took up his paper. Mr. Warner's question before any international agreement concerning airplane standardization can be arrived at as to be standardization is considered of any value at all, the builders and operators of American aircraft should be gotten used to the idea of standardization. The parts should be made to the same standards. He returned to standardization as the interests of men of maintenance convenience and replacement far from home and of the economy to reach from men's pockets of standardized articles.

"If there are any means of agreement among the men, manufacturers, as manufacturers, and operators and repairmen, Warner," Mr. Clarkin said to reach such an agreement is before each manufacturer has achieved a method of his own in installing engines in its.

Mr. Clarkin continued the same general thought. "This is a big standard, for a school or even thought of standardization means so that we can immediately put 'this' in a 'this'," he declared. Uniformity standardization is a great thing in any such procedure. Briefly it is merely discussing emergency and harmful

(Continued on page 958)

Rowland wins with a CESSNA



YOUR skill and daring, Earl Rowland, have placed your name in the front rank of aviation's "Hall of Fame." We are proud of you, and proud, too, of the fact that you chose a Cessna plane to help you win.

You have proven to the world what we have long contended—that the Cessna Condor Cabin Monoplane will out-fly any other cabin plane ever built—here—power for horsepower.

Not once, but twice have you proven this fact—first, in winning the Class A Cross-Country Derby, and, second, in winning the Glorif Course Event No. 2 at Los Angeles. You are doubly entitled to our congratulations, and we are so-damn happy to have had you there in your Cessna.



WHEREVER the air-minded gather, one name is heard on every lip—CESSNA! Already orders are pouring into the factory for duplicates of the plane in which Rowland flew to success.

This product of the old Master, Clyde V. Cessna, bids fair to be in the greatest demand of any airplane ever manufactured. The plane that Rowland flew was a strictly stock model—no clipped or racing wings, or other special features—but the same plane that we have been delivering everywhere in the country for many months past.

Don't forget, either, that in Class B, the Cessna, piloted by Schultz, was the first strictly commercial plane of any type to cross the line at Mines Field—again proving Cessna superiority.

There's a golden harvest awaiting the Cessna dealer. Will you be one of them? Write or phone us quick, and we'll tell you if your territory is still open.



The **Cessna Aircraft Company**
Wichita, Kansas

influence on direct construction. The establishment of sound material and dimensional specifications is vitally necessary in any industry. It is a slow process, but important—particularly so in the aeronautical industry where operations are conducted at a great distance.

Standardization, he pointed out, saves time and facilitates maintenance. Yet to be accepted he stated, a standard must have so much merit that engineers, producers and executives will use good reasons for its acceptance.

"In general," Mr. Clarkson declared, "in both national and international trade, demands for specifications which will bring about interchangeability of materials and parts are increasing."

Technical Papers Read and Discussed

Several other interesting papers were read among them one on "Maintenance of Structures for Naval Airplane Construction," by Lt. Lonnie L. B. Richardson of the naval air station at San Diego. Responders to this were given in effect by H. V. Thaden and George H. Prodden. As the instrument section, C. S. Moyle, engineer of the Pacific Scientific Co., discussed "The Latest Types of Aerodynamic Instruments," and Dr. Clark Millikan read a paper on "The Aerodynamic Laboratories of the California Institute of Technology."

At the design section the final meeting, several important papers were presented. G. F. Vetter, chief engineer of the Lockheed Aircraft Co., explained the materials and methods employed in building his planes. With N. Waterman, experimental engineer of the Bach Aircraft Co., discussed "Air Transportation Needs as Viewed in Designing the Bach Air Yacht." Finally George L. K. Wilson of the aircraft squadrons, battle field, discussed "The Influence of Battle Tactics on Design Tech-

nique." Even the Navy is attempting to standardize its planes, simplifying their types to meet certain conditions.

Hiram Hargrave, U. S. Seacraft Team Commander, was elected president of the N. A. A. for the coming year at the biweekly meeting of the organization. He succeeds Porter Adams, who was thanked by the association for his work as president and was chosen as one of the governors at large. Hiram Hargrave, of Virginia, was elected vice-president. Valentine Gephart was re-elected secretary, and S. P. Castle, of New York, treasurer. The other governors at large, elected by the organization are Orville Wright, of Ohio, Godfrey L. Cabot, of Massachusetts; J. Carroll Cook, of Arkansas, and Glenn L. Martin, of Ohio.

The convention was well attended, particularly by the eastern and southern states. The committee committee perhaps bore the brunt of the work, carrying a total of 18 resolutions, which were acted upon by the Association. Many of these were of minor importance, but seven rather significant ones were adopted. One of these ruled the passage by the U. S. Senate of Bill No. 224, which has been passed already by the House of Representatives and is for the purpose of settling the controversy concerning the first bi-convex-thrust machine. Another resolution provided for the placing of a granite rock bearing a suitable plate at Kitty Hawk, N. C.

Included in the five remaining resolutions was one urging that the United States become a member of an international air traffic rules commission. This resolution did not refer to the League of Nations. The fourth of the seven resolutions adopted urged that Congress appropriate funds for the establishment of a model airport at Washington, D. C., which would be available for the use of all types of aircraft. The fifth authorized

(Continued on page 960)

Jack Atkinson and His Prize Winning Monocoupe

TWO Monocoupes were entered in the National Reliability Tour. Both finished favorably and conclusively proved the reliability of the small plane properly designed and constructed.

Jack Atkinson of Gary, Indiana won the \$1,000 cash prize and title "Air Mayor of Warsaw" offered by Warsaw, Wis., to the plane and pilot making the most demonstration—a tribute to the Monocoupe with its Velle M3 engine and to Jack Atkinson as a flyer.

During the stops on the Tour for the purpose of checking over engines and planes for the next hop, the scant attention needed on his sturdy Monocoupe enabled Jack to make over 300 demonstration flights with passengers—here again in further proof of the reliability of the rugged Monocoupe with its Velle M3 engine.

The other Monocoupe entry was piloted by Phoebe Faugere Omlie, the only woman pilot on the Tour and the only woman who has ever flown a light plane across the Great American Desert and the Rocky Mountains. On this Tour both Monocoupes were in competition with planes equipped with engines powered four to ten times greater than the Velle M3.



We thank both these pilots for their able co-operation in proving so conclusively the reliability and endurance of the Monocoupe. The luxurious enclosed coupe of the air with its take-off in less than 100 feet, climb, speed, ease of control, economy and ability to get in and out of small fields, makes it the most logical and practical plane for the private owner.

Valuable territory is still available for distributors and dealers.
The list price of the famous Monocoupe is \$2675, factory at Moline, Illinois.

MONO-AIRCRAFT, INC.

Builders of the Monocoupe and the Monocoach

MOLINE, ILLINOIS, U.S.A.

Model C Model M

Dependable Motor Heat Indicators

A Boyce MotoMeter Gauge gives the telltale pointer a confirmation of engine heat in seconds. Boyce MotoMeters have been used on practically every engine, lighter than the measurable 50-40 cc. and under 100 lbs. Price for one, factory, complete \$1.50.

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offers a wide variety
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AVIATION
September 22, 1939

the appointment of a committee to investigate the factors and the possibility of reducing life insurance rates for fliers. The committee is to make a recommendation also as to whether the association should provide financial assistance for the benefit of its members.

Of the last two of the seven resolutions, one urged that the individual states refrain from exacting aircraft licensing and inspection laws, which conflict with the regulations of the Aviation Branch of the Department of Commerce. The other provided for the appointment of a committee of seven to conduct the work necessary for the creation of a national memorial at Dayton, O., commemorating the discovery of flight.

The only "warm spot" of the convention followed the nomination for the California governorship. D. R. McDowell, present governor and one of the rare actors in the California Air Race Association, was nominated in a group from Southern California to hold office for the ensuing year. Mr. McDowell was appointed the California governor to fill an unexpired term. A group from central and southern California nominated William G. Hermon of the Boeing Airplane Co. There was spirited voting by states from the floor. Mr. McDowell won with an ample plurality. In each of the other states there was only one nomination.

The conference of the California Development Association was the shortest of any of the meetings. This organization met in three sessions. One was devoted to finance, another to insurance and the third to development. The additional meetings were followed by a general meeting. The conference began at 10 A. M., Friday, September 14. The general meeting was held and all business was completed by 1:30 P. M. the same day.

Capital News Early Obtained

In addressing the finance division, Harlan S. Harman, president of Western Air Express, pointed out that while a year ago it was difficult to obtain capital, the problem today is to prevent too much being provided. He spoke on the financial problems of air transportation lines. Edgar M. Goss, president of Keystone Aircraft Corp., said that it is impossible for the manufacturers of aircraft to utilize the system of production employed in the mass manufacture of automobiles, because of the rapid changes to aircraft design. J. Don Alexander discussed the deferred payment plan used by his company, and declared that other companies will find similar plans useful in the future.

The insurance division conducted a general discussion of the technical questions concerning aviation insurance. At the meeting of the development section, C. E. Seaton, who is a member of the aeronautical committee of the Association, told of the 170 landing fields in California. He said that service is available to fliers at each.

William P. MacCadden, assistant secretary of commerce for the association, was a speaker at the general meeting. He told the members of the California association as to something up the development of aviation in the last two years, that commercial aircraft operators must consider their problems from five points of view. These are speed, safety, reliability, cost and comfort. Many factors must also take these points into consideration, he said. The meeting was presided over by R. S. Fisher, vice-president of the Pacific Gas and Electric Co.

E. A. Johnson, of Dayton, was elected a temporary president of the National Airport Executives Association at its first annual convention, which was previously an organization meeting. V. T. Lindstrom, of Milwaukee, C. P. Newhouse, of Hamilton, and J. V. Hyde, of Seattle, were elected temporary vice-presidents. W. G. Fuller

AVIATION
September 22, 1939

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L. M. Avery, Mayor of Orlando, for particulars regarding show, prize, terms, prizes, etc.

be chosen to act as temporary secretaries-treasurer. The functions and the service to the airport sector of the Aeronautical Chamber of Commerce were outlined by John Harding, Jr. The group adjourned after discussing a number of general problems. It will meet at Chicago on December, when a permanent organization is to be effected.

Inside the Exposition Building

(Continued from page 933)

The Mutual Aircraft Corp. and the Vokes-Ryan Aircraft Corp. combined to show the new Ryan piston monoplane. The Mutual company distributes the Ryan in 11 western states. In speaking of this as a new plane it should be explained it is a custom built Ryan monoplane in position. That is Whitebird piston.

The General-Aire was exhibited by Herbert H. Miller, distributor for Southern California and Arizona. This plane has an unusually low landing speed of 25 m. p. h. It has a high speed of 154 m. p. h. It may be equipped with engines ranging from 100 hp. to 200 hp. These include the Hirth, Walter, Kinner, Fairfield-Lamson, Peco, Warner and Wright Whirlwind. The plane is of the three-place open cockpit type.

Two Golden Eagle monoplanes acquired for the first time. These were built experimentally by the R. G. Best Co., of Los Angeles and were designed and engineered by Mark H. Goodell. Mr. Best explained that going rate production would depend on type material and the interest centered by slow pattern and low deflection from that interest relative to future business. The Golden Eagle is a small notch streamlined plane. It is powered by the 60

by Arden engine. This plane is said to land at 20 m. p. h. It has a wing speed of only 24 ft. two inches. One of the models shown was open. The other was a cabin type.

The Swallow was shown by James E. Granger, distributor located at Oliver Field, Cal. One of the enclosure Swallow features described during the show is the adjustable stabilizer, which is specially attached to



The exhibit of the Standard Steel Propeller Co.

two rods sliding through long sleeves, which prevent rattle and chatter. All blades are equipped with dual controls and jacks loaded.

Crown Motor Carriage Co., aircraft division of Los Angeles, presented the Crown model "B-3" biplane. This is a three passenger, semi-open cockpit type and is powered with a Kinner K-5 radial 100 hp. engine. Here is a plane offered in dual or triple color combinations with gold or silver wings, a decided effort to beautify the airplane. This span measures 28 ft. for both upper and lower wings. It lands at 25 m. p. h. Its top speed is 112 m. p.

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than 510 cu. in., 11 planes were HAMILTON equipped. }



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THANK YOU for reading AVIATION

h. Its wing load is 7.62 lb. per square foot, and it has a power loading of 18 lb. per horsepower.

The Bach Aircraft Co. of Santa Monica, Calif., sent the Bach Air Transport, a three-engine monoplane, 50 yd. for structure. This airplane is finished in the cabin with matched wood. The cabin contains heating and ventilation system and other conveniences. The three engines combined deliver 730 hp., more than that used by many heavier planes. This 50-place transport has a wing span of 52 ft., and weighs loaded 6500 lb. It cruises at 120 m. p. h.

One of the most attractive exhibits was that of the American Aircraft Corp., of California with two Waco



The Joseph Krenner Corp. display

one Fairchild and a Fairchild aero boat. In addition the firm had four biplanes elsewhere in the hall. One of the Wacos was painted all white. It was suspended at an angle from the ceiling.

The Krenner Aviation academy showed one of its two planes, a three-place two-engine open model. This organization was started not long ago when Joseph Krenner, a Los Angeles automobile and oil man, became interested in aviation. A. J. Edwards, formerly sales manager of the Mahoney Aircraft Corp., and recently general manager of the Proctor-Sun Diego Airplane company, is vice president and general manager of the firm. The plane exhibited was finished in orange and powered with three 45 hp. Vee engines. It has a wing spread of 43



The exhibit of the American Eagle Aircraft Corp.

ft., six inches. The open plane is single control, while the other plane, shown on the field but not in the exhibition, is dual.

The Federal Aircraft Corp., of San Bernardino, Calif., an exponent of the Ryan Mechanism Monowheel Co., announced and presented their new creation, a two-place cabin monoplane. This plane has an all-steel wing. It is described by the builders as ideal for use as express and air mail freighter line, student instruction work and to provide the private owner with a dependable plane at moderate cost. It is powered by a Halladay nine cylinder engine developing 130 hp. at 1800 r.p.m. The plane measures 25 ft., four inches overall and stands 7 ft., 10 in. high. Its span is 30 ft., 10 in. It lands at 40 m.p.h., cruises at 100 and has a high speed of 115 m.p.h.

(Continued on page 906)

ANNOUNCING

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Boeing 30,000 mi. in service between Seattle and Los Angeles before entering the show. Tacoma was similar planes in service carrying mail and express. On the field was a new Boeing integrated plane with plans for 12 passengers. Plans of this type soon will enter the San Francisco-Chicago run.

Kloman Aeromarine exhibited two Kloman two-wing monoplane, one for land and one for water use. The former was powered with a two cylinder, 20 hp. Salsan motor, the latter with a 9 cylinder, 40 hp. Microdon. These are more nearly true glider types than any yet exhibited in the United States. Wings and fuselage are ply-wood covered.

Strommen exhibited the Whittaker model, whose performance has won much praise in recent months. Two American Eagles were on the floor, powered with 50 hp. Curtiss engines. A stock fuselage demonstrating the "bullet strength" features, with a new production Salsan 120 hp. motor also was shown. The Whittaker model W-14, powered with a Hallett 9 cylinder 130 hp. radial engine combines several strength features, which the builders declared will ensure long life for the plane. The plane weighs empty 1300 lb. It comes with the Hallett in excess of 800 mph. The Hallett, incidentally is a new engine, built on the Pacific Coast. The designer of the engine has had long experience with marine engines. It is of sturdy construction and is well adapted by those distributors and manufacturers who have included it as standard or optional equipment.

Spartan Aircraft from Oklahoma introduced with their planes the Walter engine, which holds an world's record. This is the first Walter engine installed in an American plane, and it was flown 1700 mi. from Tulsa to Los Angeles in 39 hr., 30 min. The Spartan Aircraft Co. holds the manufacturing and manufacturing rights for this engine

in North America. The two Spartans in the show were equipped with 9 cylinder, 120 hp. Walters.

The Harry Sport Aero Corp., of California showed a Lockheed Vega, which is to all appearances a duplicate of that in which Colonel Gailford and Harry Tucker made the recent transcontinental record flight from Los Angeles to New York. With the exception of gas tank installation and two or three minor features the planes are identical. The Sport organization has the western distribution for Lockheed. Last but not least, costs the 45 hp.



The Champion Sport-Ping exhibit

Vale powered Monocoupe, rigid in its backbone. The Monocoupe was the smallest of the cabin planes shown.

Perhaps the most interesting feature of the show was the number of engines exhibited. Several new engines made their appearance. In each there was an apparent effort to simplify, not only the external features, but reducing insofar as possible fuel resistance, but also avoid a multiplicity of working parts. Both of these features

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Both of these planes have had the best of care—and look it	
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New and complete, dual speed plane engine	
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The list of exhibitors at the National Aeronautical Exposition were as follows:

Ambassador Airways, American Eagle, Almonson Company of America, American Aircraft Corp., Aerocraft Building Corp., Aviation Machine Co., American Klean Corp., Airway Age, Aero Corporation of California, Aero Supply Mfg. Co., Associated Oil, Aero Digest, Aviation Publishing Corp., Aero Safety Appliances Corp., Airways Markets, Albany Bearing Co., Aero Model Co., Atlas Machine Works, North Products, Almonson Aircraft Co., Automotive Sales Co., Adams Aircraft, Aero Service Co., Airport Engineering Co., Avion Co., Av-



The American Company of America booth

rehead Springs Corp., Adams Aerial Transport, Aeronautical Chamber of Commerce, Aeronautical World, Advanced Aircraft, Aerial Operations, American Booth, American Steel Treating Co.

Bonair Airplane Co., Berry Brothers Brownstein Lurie Co., Belmont Lary, Bell Pacific, Bandy Airplane, Robert Bosch Magneto Co., S. F. Brown, I. J. Bonthe Corp., R. G. Box, Baby Aluminum, Baby Aircraft Corp., Hirschback Laboratories, Barden Products.

Carmen-Rosenberg, Crown Motor Carriage Co., George R. Crapp, Cokes-Gilbert Co., California Compressed Gas Co., Crawford Airplane Co., Champion Machine, Cleveland Paramount Tool Co., Consolidated Instruments, California Tool and Veneer Co., Champion Spark Plug Co., Cooper Hewitt, California Propeller Co., Cronan Irons, California Aerial Transport, Centro Aircraft, Sherris, Correr Motors, Co., Chase Vapors, California School of Aeronautics, Constantine Brothers Dealers, Dumas Hardware Corp., Department of Commerce, Douglas Co. E. I. du Pont, De Witts and Co., Ewells Tool Mfg. Co., Elysee Machine Co., Eno Rubber Co., A. R. Elster, T. E. Hing Co., Ethyl Gasoline Co.

Fellows Intertec Co., Featherline Pneumatic Products Co., Feltner Clog and Co., Flightline Fabric, Farnon De Service Shop, Fremont Tire and Rubber Co., F. V. Foster Products, Firefield, Inc.

Granger Aircraft, General Aircraft Corp., General Electric Corp., Gordon and Burgess, Goodrich Tire and Rubber Co., Goodyear Tire and Rubber Co., Hayward Starter Corp., Haskins Mfg. Co., Harris and Frank, Heiler Motors, E. Hayman and Co., Hensley, Inc., Heath and Heath, Nick Harris, W. B. Hider M. E. Hulse, Hollywood Amn Club, Hawthorne All-Metal Products.

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